

09/733,392 &amp; 90/005,710

09/10/05 Amendment

**Remarks**

Applicant requests favorable reconsideration of the Application. Applicant has amended the claims in a manner which is believed to respectfully traverse the Examiner's rejections under 35 U.S.C. § 112, as well as the Examiner's Objection. Language in the amendments to the claims is fully supported by the specification with no new matter added. Applicant has provided a Marked-Up set of claims and a Claim List - Status and Support of Current Amendment Changes. Additionally, for the Examiner's convenience, the substance of the Examiner's Office Action is set out below followed by Applicant's respective responses.

Applicant would also like to state a note of appreciation to the Examiner for his patience during the prosecution of this file, as Applicant managed this file prosecution on a Pro Se' basis.

Applicant would also like to respectfully present to the Examiner that this response to the 8/10/05 Final Office Action has been prepared and sent to the USPTO within 30 days.

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**Marked-up Set of Claims (According to 37 CFR 1.173(b)(2))**

1. (Seven times previously amended) A method for dewatering biological sludge [that has been digested by] ~~from~~ a thermophilic digestion process, comprising:
  - a. adding a polymeric quaternary ammonium compound[s], as primary component, to the biological sludge; and
  - b. adding a polyacrylamide to the biological sludge;such that any combination[s] of the polymeric quaternary ammonium compound[s] and of the polyacrylamide[s] enhance dewatering of the sludge.
2. (Seven times amended) The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound[s] ~~is~~[are from] di-allyl di-methyl ammonium chloride (DADMAC)[ family].
3. (Eight times amended) The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound[s] ~~is~~[are from] epichlorohydrin di-methyl amine (epi-DMA)[ family].
4. (Three times previously amended) The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is added directly to the sludge; and \_\_\_\_\_  
\_\_\_\_\_, upon]following the formation of microflocs of the sludge from addition of the polymeric quaternary ammonium compound, a cationic polyacrylamide is added[ to form a floc that dewateres the sludge].
5. (Three times previously amended) The method for dewatering biological sludge according to claim 4, wherein the polymeric quaternary ammonium compound and the cationic polyacrylamide are in an approximate[ly] 1:1 ratio, with the cationic polyacrylamide having a higher molecular weight than the polymeric quaternary ammonium compound[ does].

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6. (Three times previously amended) The method for dewatering biological sludge according to claim 4, wherein the ratio[s] of [the ]polymeric quaternary ammonium compound with respect to [the ]cationic polyacrylamide range from about 1:10 to about 20:1.
7. (Twice previously amended) The method for dewatering biological sludge according to claim 4, wherein the polymer concentration to solids ratio of total polymer dosage requirement in relationship to percentage of solids component of the sludge is between about 50 ppm:1 percent and about 300 ppm:1 percent.
8. (Twice previously amended) The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is added directly to the sludge, in an amount sufficient to cause formation of a cationic overcharge within a developed microfloc system, and wherein  
the polyacrylamide is[and an] anionic[ polyacrylamide is then added for final floc formation].
9. (Cancelled)
10. (Three times previously amended) The method for dewatering biological sludge according to claim 8, wherein the polymeric quaternary ammonium compound and the anionic polyacrylamide are in a approximate[ly] 10:1 ratio, with the anionic polyacrylamide having a higher molecular weight than the polymeric quaternary ammonium compound[ does].
11. (Original) The method for dewatering biological sludge according to claim 10, wherein the anionic polyacrylamide is about 40% anionic.

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12. (Three times previously amended) The method for dewatering biological sludge according to claim 8, wherein the ratio[s] of the polymeric quaternary ammonium compound to the anionic polyacrylamide ranges from about 1:10 to about 20:1.

13. (Three times previously amended) The method for dewatering biological sludge according to claim 8, wherein the polymer concentration to solids ratio of total polymer dosage requirement in relationship to percentage of solids component of the sludge is between approximately 50 ppm:1 percent and approximately 300 ppm:1 percent.

14. (Original) The method for dewatering biological sludge according to claim 1, wherein the biological sludge is mixed with primary sludge.

15. (Eight times amended) [A composition]The method for dewatering biological sludge according to claim 1, [comprising] wherein:

said polymeric quaternary ammonium compound[s, as primary component, and] is added along with a cationic polyacrylamide; and

said polymeric quaternary ammonium compound and cationic polyacrylamide[components being] are present [In the composition in a ratio ]to enable dewatering of the biological sludge[the composition to function as an agent for dewatering biological sludge from a thermophilic digestion process].

16. (Six times amended) The method for dewatering biological sludge according to claim 1, wherein the polyacrylamide is used in solution, emulsion or dry form and the polymeric quaternary ammonium compound[s are]is used in solution, emulsion or [in ]dry form.

17. (Cancelled)

18. (Cancelled)

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19. (Three times amended) The method of claim 1, wherein said polyacrylamide is cationic or anionic.

20. (Cancelled)

21. (Cancelled)

22. (Four times amended) A method for dewatering a sludge comprising water and solids, wherein the solids comprise thermophiles, the method comprising:

\_\_\_\_\_ contacting the sludge according to a technique selected from a group of techniques including:

\_\_\_\_\_ contacting the sludge with a polymeric quaternary ammonium compound along with a polyacrylamide; and

\_\_\_\_\_ contacting the sludge first with a polymeric quaternary ammonium compound and then with a polyacrylamide;

\_\_\_\_\_ to form a floc.

23. (Cancelled)

24. (Three times amended) The method of claim 22, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary ammonium compound having a molecular weight in the range of about 500,000 to about 3,000,000, and said polyacrylamide comprises a cationic polyacrylamide having a molecular weight in the range of about 5,000,000 to about 15,000,000.

25. (Twice amended) The method of claim 22, wherein said polymeric quaternary ammonium compound is added in an amount sufficient to form microflocs of said thermophiles; and wherein

\_\_\_\_\_ said polyacrylamide is cationic and added in an amount sufficient to agglomerate the microflocs into flocs for dewatering.

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26. (Four times amended) The method of claim 22, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

27. (Twice amended) The method of claim 25, wherein the ratio of said polymeric quaternary ammonium compound to said cationic polyacrylamide is in the range of about 1:10 to about 20:1.

28. (Three times amended) The method of claim 25, wherein the concentration of said polymeric quaternary ammonium compound and said cationic polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

29. (Three times amended) The method of claim 22, wherein said polymeric quaternary ammonium compound is added in an amount sufficient to cause formation of said thermophiles into a developed microfloc system having a cationic overcharge, and wherein said polyacrylamide is anionic.

30. (Four times amended) The method of claim 29, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

31. (Twice amended) The method of claim 29, wherein the ratio of said polymeric quaternary ammonium compound to said anionic polyacrylamide is in the range of about 1:10 to about 20:1.

32. (Four times amended) The method of claim 29, wherein the total concentration of said polymeric quaternary ammonium compound and said anionic

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polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

33. (Twice previously amended) A method for dewatering a sludge comprising water and thermophiles, the method comprising:

adding to the sludge a polymeric quaternary ammonium compound.

34. (Four times amended) The method of claim 33, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary ammonium compound having a molecular weight of greater than about 5,000,000.

35. (Three times amended) The method of claim 33, wherein said polymeric quaternary ammonium compound is added in an amount sufficient to form microflocs of the thermophiles.

36. (Four times amended) The method of claim 35, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

37. (Three times amended) The method of claim 35, wherein the concentration of said polymeric quaternary ammonium compound to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

38. (Four times amended) The method of claim 35, wherein said polymeric quaternary ammonium compound is added in an amount sufficient to cause formation of said thermophiles into a developed microfloc system having a cationic overcharge, and wherein an anionic polyacrylamide is added for final floc formation.

39. (Cancelled)

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40. (Three times amended) The method of claim 38, wherein the concentration of said polymeric quaternary ammonium compound to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

41. (Three times previously amended) A sludge composition comprising:

water;

polyacrylamide comprising a cationic or an anionic moiety;

a polymeric quaternary ammonium compound; and

solids comprising thermophiles.

42. (Cancelled)

43. (Cancelled)

44. (Four times amended) The sludge composition of claim 41, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

45. (Three times amended) The sludge composition of claim 41, wherein the ratio of said polymeric quaternary ammonium compound to said polyacrylamide is in the range of about 1:10 to about 20:1.

46. (Three times amended) The sludge composition of claim 41, wherein the concentration of said polymeric quaternary ammonium compound and said polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

47. (Three times amended) The sludge composition of claim 41, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary



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ammonium compound having a molecular weight in the range of about 500,000 to about 3,000,000, and said polyacrylamide comprises a polyacrylamide having a molecular weight in the range of about 5,000,000 to about 15,000,000.

48. (Three times previously amended) A sludge composition comprising:  
water;

polyacrylamide comprising a cationic or an anionic moiety;

a polymeric quaternary ammonium compound; and

solids comprising microflocs of thermophiles.

49. (Cancelled)

50. (Cancelled)

51. (Four times amended) The sludge composition of claim 48, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

52. (Three times amended) The sludge composition of claim 48, wherein the ratio of said polymeric quaternary ammonium compound to said polyacrylamide is in the range of about 1:10 to about 20:1.

53. (Three times amended) The sludge composition of claim 48, wherein the concentration of said polymeric quaternary ammonium compound and said polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

54. (Three times amended) The sludge composition of claim 48, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary

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ammonium compound having a molecular weight in the range of about 500,000 to about 3,000,000, and said polyacrylamide comprises a polyacrylamide having a molecular weight in the range of about 5,000,000 to about 15,000,000.

55. (Three times previously amended) A sludge composition comprising:

water;

polyacrylamide comprising a cationic or an anionic moiety;

a polymeric quaternary ammonium compound; and

solids comprising an agglomeration of microflocs of thermophiles.

56. (Cancelled)

57. (Cancelled)

58. (Four times amended) The sludge composition of claim 55, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

59. (Three times amended) The sludge composition of claim 55, wherein the ratio of said polymeric quaternary ammonium compound to said polyacrylamide is in the range of about 1:10 to about 20:1.

60. (Three times amended) The sludge composition of claim 55, wherein the concentration of said polymeric quaternary ammonium compound and said polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

61. (Three times amended) The sludge composition of claim 55, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary

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ammonium compound having a molecular weight in the range of about 500,000 to about 3,000,000, and said polyacrylamide comprises a polyacrylamide having a molecular weight in the range of about 5,000,000 to about 15,000,000.

62 – 66. (Cancelled)

67. (Previously amended) A sludge composition comprising:

water;

thermophiles; and

a polymeric quaternary ammonium compound.

68. (Four times amended) The sludge composition of claim 67, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

69. (Twice amended) The sludge composition of claim 67, wherein said polymeric quaternary ammonium compound is present in an amount sufficient to form microflocs of said thermophiles.

70. (Twice amended) The sludge composition of claim 67, wherein said polymeric quaternary ammonium compound is present in an amount sufficient to cause formation of said thermophiles into a developed microfloc system having a cationic overcharge.

71. (Four times amended) The sludge composition of claim 67, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary ammonium compound having a molecular weight of at least about 5,000,000.

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72. (Previously added) The method of claim 22, wherein said polyacrylamide is cationic or anionic.

73. (Previously amended) The method of claim 33, wherein a cationic polyacrylamide is added.

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**Claim List – Status and Support of Current Amendment Changes**

Claim	Status	Type	Support of Changes
1	Pending	Method	There are no changes in this amendment.
2	Pending	Method	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8.
3	Pending	Method	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8.
4	Pending	Method	There are no changes in this amendment.
5	Pending	Method	There are no changes in this amendment.
6	Pending	Method	There are no changes in this amendment.
7	Pending	Method	There are no changes in this amendment.
8	Pending	Method	There are no changes in this amendment.
9	Cancelled	N/A	N/A
10	Pending	Method	There are no changes in this amendment.
11	Original	Method	There are no changes in this amendment.
12	Pending	Method	There are no changes in this amendment.
13	Pending	Method	There are no changes in this amendment.
14	Pending	Method	There are no changes in this amendment.
15	Pending	Method	"comprising" has been replaced by "wherein" – grammatical correctness; "a" has been replaced by "said" – antecedent basis; "primary component" has been replaced by "is added along with" – "being" has been replaced by "are" – support is found in the abstract and in col. 4 lines 51 – 54.
16	Pending	Method	"is used in solution, emulsion or dry form" is inserted to relate to both polyacrylamide, as well as polymeric quaternary ammonium compound. "one or both of" has been removed - support is found in col. 7 line 49 – col. 9 line 49, along with col. 6 line 49 – 57 and col. 7 line 34 – 37.
17	Cancelled	N/A	N/A
18	Cancelled	N/A	N/A
19	Pending	Method	"the" is replaced with "said" – grammatical correctness and antecedent basis.
20	Cancelled	N/A	N/A
21	Cancelled	N/A	N/A
22	Pending	Method	"cationic polyacrylamide" is changed to "polyacrylamide" - support is found in the abstract, col. 5 lines 52-57, col. 6 lines 44-47 and col. 7 lines 4 through 20.
23	Cancelled	N/A	N/A
24	Pending	Method	"cationic polyacrylamide" is changed to "polyacrylamide;" - support is found in col. 5 lines 52-63 and col. 7 lines 11-14; "the" is replaced with "said" – grammatical correctness and antecedent basis.

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25	Pending	Method	"the cationic polyacrylamide" is changed to "said polyacrylamide" - support is found in the abstract, col. 5 lines 52-63 and col. 7 lines 11-14; "the" is replaced with "said" - grammatical correctness and antecedent basis.
26	Pending	Method	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
27	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
28	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
29	Pending	Method	"anionic instead of cationic" is removed and replaced by "anionic" - support is found in the abstract and in col. 6 lines 9-20.
30	Pending	Method	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
31	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
32	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
33	Pending	Method	There are no changes in this amendment.
34	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
35	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
36	Pending	Method	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
37	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
38	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
39	Cancelled	N/A	N/A
40	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
41	Pending	Composition	There are no changes in this amendment.
42	Cancelled	N/A	N/A

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43	Cancelled	N/A	N/A
44	Pending	Composition	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
45	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
46	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
47	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
48	Pending	Composition	There are no changes in this amendment.
49	Cancelled	N/A	N/A
50	Cancelled	N/A	N/A
51	Pending	Composition	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
52	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
53	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
54	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
55	Pending	Composition	There are no changes in this amendment.
56	Cancelled	N/A	N/A
57	Cancelled	N/A	N/A
58	Pending	Composition	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
59	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
60	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
61	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
62	Cancelled	N/A	N/A
63	Cancelled	N/A	N/A
64	Cancelled	N/A	N/A
65	Cancelled	N/A	N/A

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66	Cancelled	N/A	N/A
67	Pending	Composition	There are no changes in this amendment.
68	Pending	Composition	"variety" has been removed - support is found in the abstract and col. 1 lines 10-17 and col. 5 line 2-8; "the" is replaced with "said" - grammar and antecedent basis; quaternized polyacrylamide is added - support is found in the abstract, col. 6 line 44 to col. 7 line 20 and col. 8 lines 24 - 51.
69	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis; "for" is replaced by "to" - typographical error and grammatical correctness.
70	Pending	Composition	"the" is replaced by "said" - grammatical correctness and antecedent basis.
71	Pending	Composition	"in the range" has been removed - grammatical correctness; "the" is replaced by "said" - grammatical correctness and antecedent basis; support is found in col. col. 5 lines 52-63.
72	Pending	Method	"the" is replaced by "said" - grammatical correctness and antecedent basis.
73	Pending	Method	There are no changes in this amendment.



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**Examiner's Remarks, Objections and Rejections with Applicant's Response****"Allyl"/DADMAC Family Rejections**

Claims 2, 3, 26, 30, 36, 44, 51, 58, 68 are rejected under 35 USC Sec. 112 (2<sup>nd</sup>) for failing to particularly point out and distinctly claim the invention. ...

**Applicant's Response**

Applicant understands the Examiner's rejection. To address the Examiner's rejection under Section 112 (2<sup>nd</sup>) paragraphs, Applicant has amended Claims 2, 3, 26, 30, 36, 44, 51, 58 and 68 to read as follows:

"2. The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is di-allyl di-methyl ammonium chloride (DADMAC).

3. The method for dewatering biological sludge according to claim 1, wherein the polymeric quaternary ammonium compound is epichlorohydrin di-methyl amine.

26. The method of claim 22, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide.

30. The method of claim 29, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide.

36. The method of claim 35, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide.

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44. The sludge composition of claim 41, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide.

51. The sludge composition of claim 48, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide.

58. The sludge composition of claim 55, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide.

68. The sludge composition of claim 67, wherein said polymeric ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl amine and quaternized polyacrylamide."

In all cases the term "DADMAC variety" has been replaced with the term "di-allyl di-methyl ammonium chloride;" and the term "Epi-DMA variety" has been replaced with the term "epichlorohydrin di-methyl amine." As such, Applicant respectfully submits that the claim amendments favorably overcome the Examiner's rejection under 35 USC section 112, second paragraph.

Applicant appreciates the Examiner's recognition that support clearly exists for the "variety phraseology" and that "there exist many variants of the polyquaternary amine moiety." As such, for purposes of exemplifying representative polymeric quaternary ammonium compounds, Applicant has amended claims 2 and 3 to reflect DADMAC and Epi-DMA, respectively, and has amended claims 26, 30, 36, 44, 51, 58 and 68 to reflect the group consisting of: DADMAC, Epi-DMA and quaternized polyacrylamide. Therefore, Applicant sees an area of agreement with the Examiner. And, in an effort to reach that agreement, claims 2, 3, 26, 30, 36, 44, 51, 58 and 68 are

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so amended. Applicant respectfully requests an allowance of claims 2, 3, 26, 30, 36, 44, 51, 58 and 68 as amended herein.

**"One or both...solution, emulsion, or in dry form" - Sec. 112(2'nd) Paragraph**

Claim 16 is rejected under 35 USC Sec. 112(2'nd) for failing to particularly point out and distinctly claims the invention. ...

**Sec. 112 (1'st para) - lack of written description**

Claim 16 is rejected under 35 USC Sec. 112 (first paragraph) for failure of the application to describe the claimed subject matter. ...

**Applicant's Response**

Applicant appreciates and understands the Examiner's rejection. Claim 16 has been amended to read:

16. The method for dewatering biological sludge according to claim 1, wherein said polyacrylamide is used in solution, emulsion or dry form and said polymeric quaternary ammonium compound is used in solution, emulsion or dry form.

Based on the foregoing, Applicant respectfully submits that the Examiner's rejections of claim 16 under 35 USC section 112, first paragraph and second paragraph, have been respectfully traversed. As such, Applicant requests allowance of claim 16 as amended herein.

**"wherein the polyacrylamide is anionic instead of cationic"**

Claim 29 is rejected under 35 USC Sec. 112(2<sup>nd</sup> paragraph) for failing to particularly point out and distinctly claim the invention. ...

**Applicant's Response**

Applicant understands and appreciates the Examiner's rejection. Claim 29 has been amended to state:

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"29. The method of claim 22, wherein said polymeric quaternary ammonium compound is added in an amount sufficient to cause formation of the thermophiles into a developed microfloc system having a cationic overcharge, and wherein said polyacrylamide is anionic."

Further, in order to provide proper antecedent basis, claims 22, 24, 25, 26, 27, 28, 30, 31 and 32 have been amended to state:

"22. A method for dewatering a sludge comprising water and solids, wherein the solids comprise thermophiles, the method comprising:

contacting the sludge according to a technique selected from a group of techniques including:

contacting the sludge with a polymeric quaternary ammonium compound along with a polyacrylamide; and

contacting the sludge first with a polymeric quaternary ammonium compound and then with a polyacrylamide;

to form a floc.

24. The method of claim 22, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary ammonium compound having a molecular weight in the range of about 500,000 to about 3,000,000, and said polyacrylamide comprises a cationic polyacrylamide having a molecular weight in the range of about 5,000,000 to about 15,000,000.

25. The method of claim 22, wherein said polymeric quaternary ammonium compound is added in an amount sufficient to form microflocs of said thermophiles; and wherein

said polyacrylamide is cationic and added in an amount sufficient to agglomerate the microflocs into flocs for dewatering.

26. The method of claim 22, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

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27. The method of claim 25, wherein the ratio of the polymeric quaternary ammonium compound to said cationic polyacrylamide is in the range of about 1:10 to about 20:1.

28. The method of claim 25, wherein the concentration of said polymeric quaternary ammonium compound and said cationic polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent.

30. The method of claim 29, wherein said polymeric quaternary ammonium compound comprises at least one compound selected from the group consisting of di-allyl di-methyl ammonium chloride, epichlorohydrin di-methyl ammine and quaternized polyacrylamide.

31. The method of claim 29, wherein the ratio of said polymeric quaternary ammonium compound to said anionic polyacrylamide is in the range of about 1:10 to about 20:1.

32. The method of claim 29, wherein the total concentration of said polymeric quaternary ammonium compound and said anionic polyacrylamide to the percentage of solids in said sludge is in the range of about 50 ppm:1 percent to about 300 ppm:1 percent."

Based on the foregoing, Applicant respectfully submits that the Examiner's rejections of claim 29 under section 112 have been traversed. As such, Applicant requests allowance of claim 29 as amended herein, as well as claims 22, 24, 25, 26, 27, 28, 30, 31 and 32 as amended herein.

**"wherein the polyacrylamide is cationic or anionic"**

Claim 72 is rejected under 35 USC Sec. 112(2<sup>nd</sup> paragraph) for failing to particularly point out and distinctly claim the invention. ...

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**Applicant's Responses**

Applicant understands and appreciates the Examiner's rejection. As Applicant has amended claim 22 above, Applicant has respectfully traversed the Examiner's rejection. Applicant respectfully requests an allowance of claim 72 as previously written.

**Other Sec. 112, 2<sup>nd</sup> Paragraph rejections**

Claim 15 is rejected under 35 USC Sec. 112(2<sup>nd</sup>) for failing to particularly point out and distinctly claim the invention. ...

**Applicant's Responses**

Applicant understands and appreciates the Examiner's rejection. Applicant has amended claim 15 to state:

"15. The method for dewatering biological sludge according to claim 1, wherein:

said polymeric quaternary ammonium compound is added along with a cationic polyacrylamide; and

said polymeric quaternary ammonium compound and cationic polyacrylamide are present to enable dewatering of the biological sludge."

As Applicant has amended claim 15 above, Applicant has respectfully traversed the Examiner's rejection. Applicant respectfully requests an allowance of claim 15 as amended herein.

Applicant also noted the Examiner's suggestion to replace "a" with "said" in claim 15 of the office action. To provide proper antecedent basis, grammatical correctness and comply with direction provided by the Examiner, Applicant has replaced "the" with "said" in claims 19 to 73 when there is an antecedent basis.

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09/10/05 Amendment

**Claim Objection**

Objection is made to Claim 71 because of the following informalities: Claim 71 recites the phrase, "in the range of at least about 5,000,000." A range is defined by a lower and an upper endpoint. The claim recites a lower endpoint, i.e., "about 5,000,000," but not an upper endpoint. Appropriate correction is required. It is suggested that the phrase "in the range" be deleted from claim 71.

**Applicant's Responses**

Applicant understands and appreciates the Examiner's rejection. Applicant has amended claim 71 to state:

"71. The sludge composition of claim 67, wherein said polymeric quaternary ammonium compound comprises a polymeric quaternary ammonium compound having a molecular weight of at least about 5,000,000."

As Applicant has amended claim 71 above, Applicant has respectfully traversed the Examiner's rejection. Applicant respectfully requests an allowance of claim 71 as amended herein.

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09/10/05 Amendment

**Conclusion**

Applicant respectfully requests entry of this amendment, along with favorable reconsideration of the pending claims. This amendment places the claims in a condition for allowance. The amendments to the claims do not raise any new matter issues and no additional searching is required. Additionally, Applicant requests that in view of this fact, the amendment be entered, and after due consideration of the facts presented herein, the claims be allowed and a certificate be issued.

To facilitate the resolution of any issues or questions presented by this paper, Applicant respectfully requests that the Examiner directly contact the undersigned by phone to further the discussion, reconsideration and allowance of the claims.

Respectfully submitted,



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